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Kerr-McGee Natural Gas STAR Case Study Series

Kerr-McGee has long believed that environmental stewardship goes hand-in-hand with corporate growth. Kerr-McGee's participation in EPA's Natural Gas STAR Program exemplifies this belief, highlighting the company's history of looking for ways to eliminate methane emissions while reaping the economic benefits of bringing more gas to market. Kerr-McGee has reduced emissions by more than 8.5 billion cubic feet (Bcf) since 1992. At the 2000 annual Gas STAR workshop, EPA announced Kerr-McGee as the Gas STAR Production Partner of the Year in recognition of its methane emission reduction accomplishments. This case study highlights how Kerr-McGee has adapted an integrated emission reduction program to a successful partnership with Gas STAR.

PARTNER PROFILE

Kerr-McGee Corporation, based in Oklahoma City, Oklahoma, is one of the largest U.S.-based independent oil and gas exploration and production companies. Founded in 1929 as a drilling operation in Oklahoma, Kerr-McGee moved into refining in 1945. In 1947, Kerr-McGee made history drilling and completing the first commercially productive well out of sight of land. The well was on Ship Shoal Block 32 in the Gulf of Mexico. In 2000, the company's natural gas sales averaged 531 MMcf. Kerr-McGee operates key facilities onshore in the U.S., in the Gulf of Mexico, including deep water, in the United Kingdom sector of the North Sea, and smaller exploration and production activities in Ecuador, Indonesia, Kazakhstan, and South China Sea.

Joining Natural Gas STAR

Involvement with the Natural Gas STAR Program was a common-sense move for Kerr-McGee. When it joined in September 1996, the company was already seeking ways to eliminate emissions through its Environmental, Health, and Safety (EH&S) division and the respective regional operation departments. Wherever leaks were found, a multi-disciplinary team, comprised of operations and environmental staff, selected repair options based on economic modeling and regulatory requirements.

Kerr-McGee was first introduced to Gas STAR as a result of an effort by EPA and the American Petroleum Institute (API) to promote the program to API's membership. At the time, Kerr-McGee's EH&S director was a member of API's board of directors. What he learned from meetings with EPA established a basis for partnering with Gas STAR. Specifically, Kerr-McGee's involvement in the program seemed like a natural extension of its environmental program, which already included some of the Natural Gas STAR recommended best management practices (BMPs). In addition, the ability to create a permanent record of past, present, and future emission reduction activities through Gas STAR was an influential factor in Kerr-McGee's decision to join.

Bringing a senior-level endorsement of Gas STAR into the decision-making process made the idea of a partnership with EPA an easier sell for the rest of the company. With strong support from the corporate office, all of Kerr-McGee's gas-related domestic business units decided to participate in the program.

Getting Started

Kerr-McGee's early Gas STAR Program implementation efforts relied heavily upon the active involvement of both operations and environmental staff. According to Kerr-McGee's STAR implementation manager, Stuart Wittenbach, program implementation was really a matter of building upon and maintaining internal relationships with all the right people. Specifically, tapping established relationships between EH&S and operations departments from the beginning was critical to the program's success.

The first example of Kerr-McGee's approach was the development of the company's implementation plan. Cooperation between environmental and operations staff resulted in the development of a quality implementation plan that helped to focus the company's Gas STAR efforts. Kerr-McGee's implementation plan highlighted three key areas of activity, including:

1. Identifying program BMPs that the company could integrate into all new facilities where practicable.
2. Evaluating the usefulness of the BMPs and partner reported opportunities (PROs) at older facilities on a case-by-case-basis.
3. Conducting inventories of existing facilities to determine and document past methane emission reduction activities.

In addition to the implementation plan, another challenge early in the process was communicating Kerr-McGee's program commitment throughout the company. Based on the recommendation of the EH&S staff, Kerr-McGee decided to use their Environmental Excellence Teams to educate employees about the program. The teams consist of representatives from the company's U.S. Onshore and Gulf Region operations. They were organized in the early 1990s to encourage companywide efforts for attaining environmental goals and competition through an annual awards program. Kerr-

McGee officially launched the corporate Gas STAR Program at the annual regional Environmental Excellence Team meetings, where EH&S empowered team members to take the methane emission reduction message back to their districts. EPA provided Gas STAR Program materials to the Environmental Excellence Teams to support this effort.

To complement the work of the Environmental Excellence Teams, a letter from top-level management announcing the new partnership was distributed to all employees to encourage their support. "Top-down communication of environmental goals and initiatives is standard operating procedure for Kerr-McGee," Wittenbach said. "We pride ourselves on our environmental ethic." This top-level support also helped eliminate barriers to smooth program implementation.

McGee's first activities was to inventory all past emission reduction activities implemented throughout the company. As part of this effort, operations and EH&S staff worked together to collect information on past methane emission reduction activities from as far back as 1990. As a result, Kerr-McGee was able to document these past reductions and found that several of the Natural Gas STAR BMPs and PROs were already in use in its operations, including the installation of flares and vapor recovery units (VRUs).

> "If you are thinking about joining, there is no reason not to. You have the flexibility to implement BMPs if they meet your economic criteria. Also, partnership is a good way to bring more awareness and emphasis to methane emission reductions."
>
> *-Stuart Wittenbach,*
> *Kerr-McGee's Gas STAR Implementation Manager*

Implementing the Program

Kerr-McGee set up its Gas STAR effort as a centrally managed program, implemented independently throughout the North American divisions. As the implementation manager, Wittenbach is the central source for Gas STAR information and is responsible for emission reduction data collection. The EH&S division facilitates and champions emission reduction efforts for the company, relying on its relationships with operations staff to make it happen.

An example of how Kerr-McGee relies on cooperation between EH&S and operations staff was evident early in its implementation process. One of Kerr-

Another area where this cooperation has been critical is in new facility construction. As part of its program commitment, Kerr-McGee takes Gas STAR and other pollution prevention measures into consideration whenever the company launches a new construction project or retrofits existing equipment. "Maintaining relationships with key personnel in the construction and maintenance departments ensures EH&S participation whenever a new project is initiated," Wittenbach said.

At the beginning of new construction projects or maintenance efforts, Wittenbach works with project

team members to identify opportunities in which Gas STAR BMPs and other pollution prevention activities can be implemented. As the project moves into the design and specification stages, Kerr-McGee incorporates emission reduction technology when appropriate. This step is especially important on new construction efforts, as integration of emission reduction technologies in the early design stages can save a lot of time and effort associated with installation of retrofit controls.

According to Wittenbach, economic benefits alone can justify the incorporation of emission reduction technologies in about 50 to 60 percent of new construction and maintenance retrofits. "In the vast majority of other cases, we incorporate the control measures just to be a safe and responsible corporate citizen," he said. Wittenbach said he finds explaining the economic benefit of emission reductions in terms of "money in the bank" as the most effective approach—focusing on the connection between captured gas and corporate profits.

Since Kerr-McGee became a Gas STAR partner, it has continued to build and expand the company's emission reduction efforts from its initial VRU and flare installations, which were in place prior to joining Gas STAR. Adding instrument air systems in place of gas-actuated instruments, recapturing vent gas from Wilden pumps for return to the downstream pipe, and installing low-bleed pneumatics in areas where emissions were high have substantially reduced gas losses for Kerr-McGee.

Reporting Results

Assembling results is the other half of Kerr-McGee's program. Wittenbach relies heavily on established lines of communication to let the operations staff know each year that it is time to inventory new activities and report accomplishments. At the beginning of each calendar year, Wittenbach sends out an e-mail to all of his field contacts on the Environmental Excellence Teams and asks them to complete their portion of a pre-

LESSONS LEARNED

A set of guiding principles for Kerr-McGee has contributed to its successful experience with Gas STAR:

- **Build Alliances**—EH&S staff have become a mainstay within the operations, construction, and maintenance sections of Kerr-McGee. By building alliances within those departments, the company's Gas STAR Program is able to stay involved in nearly every project in which an emission reduction opportunity exists, and it is able to gather the necessary information for reporting program achievements.
- **Maintain Open Communication**—To ensure program awareness throughout the company and to gather the needed information from field staff in all of its regions, Kerr-McGee makes sure that open communication is maintained. From weekly electronic communications between the Environmental Excellence Teams and the EH&S division to the Gas STAR implementation manager's meetings with key staff in the field each month, Kerr-McGee keeps everyone informed.
- **Involve Field Personnel**—Field staff are instrumental to successful program implementation. Regular meetings between the implementation manager and field staff help ensure that field personnel are well-informed of the issues and know how important they are to the success of the environmental programs.

pared spreadsheet within 3 to 4 weeks. Most of the annual emission reduction information comes to Wittenbach through e-mail messages that he gathers and consolidates into a single report.

As an environmental supervisor, Wittenbach also travels to each of the districts monthly to meet with field staff. As part of the annual data collection effort, those meetings will often include working with staff to inventory the necessary emission reduction activities. Wittenbach noted that, in many cases, the field staff have so many issues to deal with every day, reporting can be delayed due to time conflicts. In these cases, Wittenbach will take time to help gather and calculate data for the field staff to ensure reports are made from each region.

Joining Forces—Mergers and Acquisitions

Perhaps one of the greatest challenges for Kerr-McGee's Gas STAR Program was the company's growth as a result of its merger with Oryx Energy Company. The merger of Oryx posed an interesting scenario for the EH&S division in bringing a new group of employees up to speed on Kerr-McGee's environmental programs, including participation in Gas STAR.

According to Wittenbach, this transition was smoother than anyone could have imagined. Having heard about the Gas STAR Program before joining Kerr-McGee, the new employees were excited to take part in the program and bring its emission reduction programs up to the level of its new partner. Involvement in several other EPA voluntary partnership programs, including Green Lights and WasteWise, proved valuable in approaching implementation of the Gas STAR Program at these facilities.

A smooth integration resulted, and additional emission reduction inventories were added to the Natural Gas STAR annual report. This occurred as a result of cooperative efforts between the existing Kerr-McGee team and new Kerr-McGee employees to gather information on past emission reduction activities at the acquired facilities.

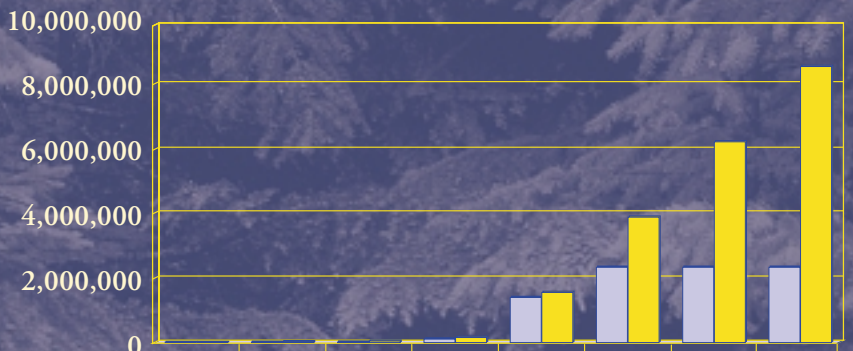
Future Plans

To maintain the program's momentum, Wittenbach has worked within the company to keep the program visibility high. Information about Kerr-McGee's Natural Gas STAR Program regularly appears in the Kerr-McGee newsletter. The Gas STAR Program is also included in the company's annual environmental training program and accomplishments are recognized in Kerr-McGee's annual Environmental Excellence Awards.

To celebrate its 2000 Natural Gas STAR Production Partner of the Year award, Kerr-McGee distributed golf shirts with the Gas STAR logo to all employees in its domestic onshore and offshore regions. The company also plans to distribute program hard hat stickers to all domestic onshore and offshore field workers and on-site contractors. Finally, Kerr-McGee had Partner of the Year plaques made for every domestic location to display at their site. Kerr-McGee is very proud of its accomplishments and wants to promote its Natural Gas STAR partnership to all of its domestic employees.

KERR-MCGEE'S NATURAL GAS STAR ACHIEVEMENTS

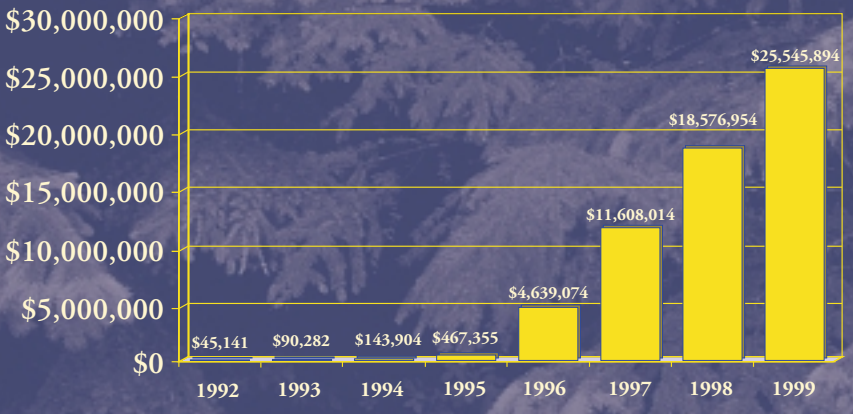
Kerr-McGee's Emission Reductions (Mcf)



	1992	1993	1994	1995	1996	1997	1998	1999
Annual	15,047	15,047	17,874	107,817	1,390,573	2,322,980	2,322,980	2,322,980
Cumulative	15,047	30,094	47,968	155,785	1,546,358	3,869,338	6,192,318	8,515,298

- Kerr-McGee averaged more than 1 Bcf of annual emission reductions since 1992.
- Since joining Gas STAR in 1996, Kerr-McGee averaged more than 2 Bcf of emission reductions per year.

Kerr-McGee's Savings from Emission Reductions



- Kerr-McGee has saved an average of $3.2 million annually since beginning a formal emission reduction program.